



THE
TEXTILE
MUSEUM
JOURNAL

1990-1991

Green + Swetzoff		
TM #	Col. #	Page
R 36.11	5	51
1971.23.30	7,8,9	52+3

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TEXTILE
MUSEUM
JOURNAL

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Volumes 29 and 30

The Textile Museum
Washington, D.C.
1991

The Textile Museum Journal was edited by Sara Wolf Green and Ann Pollard Rowe.

Production Coordinator,
Copy Editor: Beth Davis-Brown
Designer: Chroma Design and
Communications
Printer: Schneidereith and Sons, Inc.

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ISSN: 0083-7407

Cover Photo:
Wool carpet
Central Caucasus, 17th or 18th century
Acquired by George Hewitt Myers in 1916
TM R36.1.1
195 in (warp) x 93 in (weft)

A classic "dragon" carpet with two-tiered lattice of paired lanceolate leaves enclosing addorsed pairs of dragons and lotus blossoms. Scattered in pairs are stylized lions, ducks, pheasant, and mythical beasts with palmette blossoms and sunbursts placed at points of intersection.

Note to Contributors:

The Textile Museum Journal is devoted to the presentation of scholarship concerning the cultural, technical, historical, and aesthetic significance of textiles. The journal is international in scope with emphasis on geographic areas represented in The Textile Museum's collections: Near East, Central, South, and Southeast Asia, and South and Central America.

Authors are invited to submit manuscripts based on original research of a documentary, analytical, or interpretive nature. Articles should be both scholarly and accessible to the public.

For further information, write to Journal Coordinator, *The Textile Museum Journal*, 2320 'S' Street, NW, Washington, D.C. 20008

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Woven Traditions: The Integration of Conservation And Restoration Techniques in the Treatment of Oriental Rugs

by Zoe Annis Perkins,
Jeanne Brako,
and Robert Mann

The collection of the Saint Louis Art Museum contains 110 rugs from the noted James F. Ballard Oriental rug collection. In examining these rugs in preparation for exhibition, it was felt that old repairs detracted from the visual image of the pieces. Additionally, many of these repair techniques were detrimental to the internal structure of the rugs.

The importance of these objects warranted major conservation treatment in order both to improve their appearance and stabilize areas of damage. To achieve this objective, the skills of a professional rug restorer were required.

In 1988, the Museum received a grant from the National Endowment for the Arts for a professional rug restorer to treat six rugs under the direction of two textile conservators. The following is a discussion of the collaborative decision-making processes used in determining an ethical treatment plan for each of the rugs, and a description of the specific techniques employed in improving four of the rugs.

Need for Conservation

Old repairs often disfigure rugs. Typical methods of repair include darning, the use of embroidery stitches to cover damaged areas, and the use of patches from other rugs to fill in holes. Many of these traditional sewing repairs and reinforcement techniques were efforts to make a rug functional. In some cases these are unnecessary for a piece in a museum collection. Treatments which are inconsistent with rug construction can cause disfigurement and distortion on the surface as well as in the internal structure.

Another technique that produces disfigurement is late 19th century reknottting done with early aniline-dyed yarns. The dyes may have matched at the time of reknottting, but may have since changed to different, often harsh colors that disrupt the visual aesthetic of the rug.

Quite often, poor restoration efforts are the primary reason that historically significant rugs are not considered "displayable" in a museum. A rug's condition also determines its usefulness for publication. In many cases, poor restoration limits publications to black and white photographs of these rugs, further diminishing their educational value.

Conservation vs. Restoration

It is fair to question why textile conservators are only now beginning to address aesthetic compensation of rugs. In many instances conservators have feared the use of restoration techniques primarily as a reaction to treatments that compromised original artifacts in the attempt at compensation for loss. To avoid this problem, textile conservators, especially in the past 20 years, turned to minimalism as a way of addressing loss. Typical minimalist techniques included support patches of plain fabric in areas of void and allowing most poor repairs to remain as part of the textile regardless of its lack of historical significance.

Thanks to technical advances in compensation materials and discretion in their application, conservators have learned that compensation treatments can return aesthetic integrity to artifacts and still adhere to strict conservation standards. The minimalist approach to compensation and the place of aesthetic integrity in textile restoration is

continually undergoing reassessment.

Due to the systematic nature of rug construction and the symmetry of many motifs, the design of a damaged area can be reproduced with a high degree of accuracy that minimizes the likelihood of misinterpreting the artist's original intent. In fact, reknitting, when selectively applied, can be an appropriate aesthetic and structural repair technique, even in a museum context.

There is still a tendency for conservators to draw distinct lines between restoration and conservation treatments. This is especially true in the area of carpets, since parallel

services exist for carpet restoration and carpet conservation.

It is important to remember that similarities exist within these fields. Conservators and restorers both perform sewing treatments on carpets. Whether one is sewing between original warp and weft elements (couching to patches), or sewing between warp channels and knots (rewarping), both activities are by definition treatments. Therefore, many of the distinctions that have been drawn between restoration and conservation are matters of interpretation rather than definition.

Project Guidelines

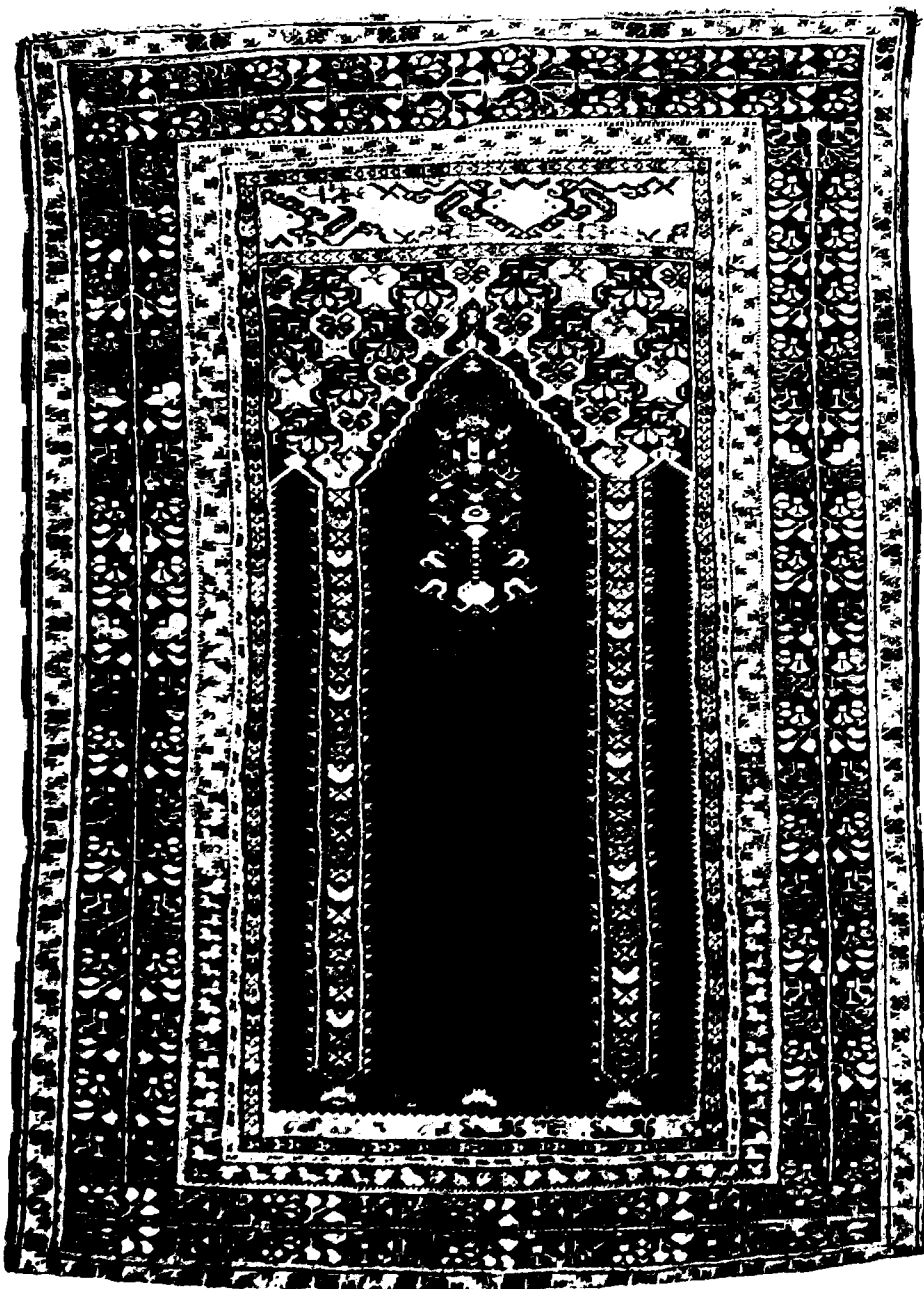
As stated above, the aim of this project was to stabilize and aesthetically improve disfiguring losses and old repairs on six rugs from the Ballard Collection. The procedure was to combine the skills and techniques traditionally used by rug restorers to achieve aesthetic compensation while adhering to established conservation philosophy and guidelines.

Prior to repair, all pieces were photographed and washed in Orvus detergent and deionized water. The rugs were soiled, although all had a history of previous washing. Cleaning was necessary prior to additional treatment for reasons such as color matching.

Curatorial examinations concluded that the disfigurement caused by the now faded colors of the previous repairs outweighed the historical value of the repairs. In all of the rugs, the previous reweaver's intention was to replace missing knots with knots of the appropriate color. Most of the removed repair knots showed close matches to the original rug colors when the yarns were examined internally.

Included in the written documentation were all previous repair techniques. All removed repair materials were saved for future reference, no original elements were removed, and, if necessary, original material was laid to the back side of the rug and retained. Technical data for the treated rugs can be found in Daniel Walker's article, "Turkish Rugs."¹

Fig. 1a. Kula prayer rug, late 18th or early 19th century (The Saint Louis Art Museum 186:1929) before treatment.



Selective Reknottting on Original Warp

The first rug to be treated was an 18th century Kula.² It was structurally stable, but the field was disfigured by previous reknotts and rewweaves which had faded (figs. 1a, 1b).³

Prior to treatment, the decision was made to visually improve the reknotted and rewoven sections of the rug by replacing the faded knots. In all of the rugs, removal of faded repair knots was designed not to disturb the original structure of the rug. It was also decided to work as much as possible on the old repair warps and wefts.

The technique of rewarping and rewefiting tends to pierce original elements. Therefore, when the removal of old rewweaves could not be accomplished without disturbing or damaging the original areas, replacement of repair warp and weft was avoided.

Knots and darning were removed from the Kula's field where original warp and weft were still in place. Removal of the reknotts and darning exposed moth-grazed areas of the pile. In approximately one third of the area where repair knots and darning had been removed, remnants of original knots were still in place. The pile was humidified to relax compressed areas, thereby closing many of the gaps in the pile. Replacement knots were selectively added to areas where the faded repair knots had been removed and where no partial original knots were found (figs. 2a, 2b).

In a rectangular-shaped rewweave area located below the hanging ornament in the field, faded repair knots were removed and new knots added (figs. 3a, 3b). After treatment, the juncture of the repair and original areas was still evident. Because the previous rewweave technique added thickness to this area, the original pile had become abraded at the juncture, exposing the cut original weft ends. In restoration, one method to conceal a joint line is to replace the worn original pile knots with new knots. The higher pile of the replacement knots would cover the cut weft line. It was decided to leave this line exposed, rather than cover or remove and replace original knots.

There was a faded rewweave in lower right corner of the border (mirab oriented upwards). Although all the colors of the rewweave were faded to some extent, it was

decided that replacement of one color, a dark blue that had faded to a light purple grey, would be enough to improve the appearance of this rewweave area. The grey knots were replaced with dark blue ones.

Skill in rug restoration is often measured by how well the restorer conceals the transition between restored and original areas. This rug was particularly challenging to Robert Mann, the restorer, who was directed to limit aesthetic improvements in accordance to conservation guidelines. Selective reknottting done partially in some areas and completely in others proved to be an effective

Fig. 1b. Kula prayer rug after treatment.

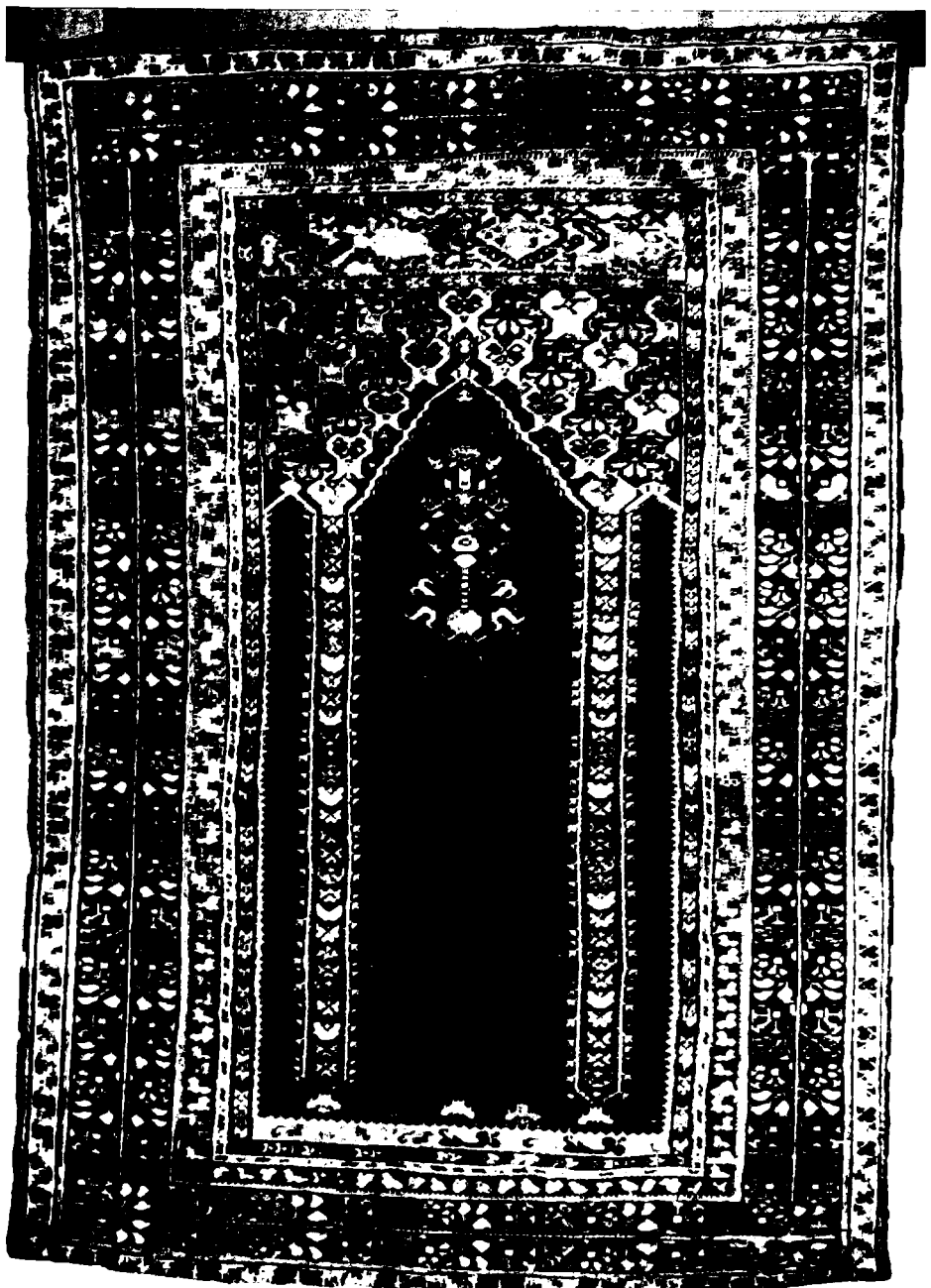


Fig.2a. Kula prayer rug
lower field before treat-
ment.

Fig. 2b. Kula prayer rug
lower field after treatment.

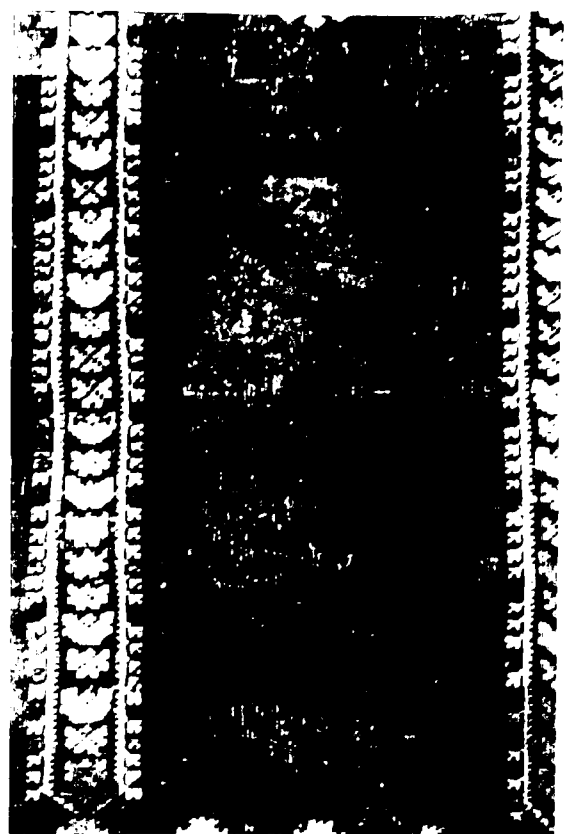


Fig. 3a. Kula rectangular
reweave below hanging
ornament before treat-
ment.

Fig. 3b. Kula rectangular
area after reknitting.



tive technique in improving the appearance of the rug.

Low Pile Knotting Technique

The second rug treated was an early 16th century "Lotto" rug.⁴ The piece was severely worn and thin, and the pile worn overall (figs. 4a, 4b). In many areas warp and weft were evident from the front of the rug. The black yarns were severely oxidized, and in many areas the black knots, which tended to outline the design, were lost. In addition, there were 14 distinct reweaves which had significantly faded. While the original warp and weft of the rug were wool, the foundation of the reweaves was red and pink cotton string. Any removal of the string reweaves, which were visible from the front due to the low pile, would have damaged weak adjacent areas of original material.

It was decided that all faded red reknots in the field and borders would be removed and replaced with knots of the correct color utilizing the replacement warps of the earlier repair.

In the areas where the dark yarn had oxidized and the pile was short or did not exist, a low pile knotting technique was used to simulate the appearance of the symmetrical knots of the pile. In this technique, a continuous yarn is used to reproduce several knots. The yarn is wound around adjacent warps and is then partially cut on the rug surface to resemble pile (fig. 5).

Because all four corners had been previously rewoven, the repair warps had been cut at the top and bottom of the rug, producing an unstable edge. The cut edges were reinforced by stitching with a linen thread to stabilize the edge before reknitting could proceed.

No original side or end finish remained on this rug. The entire perimeter had been cut, and a fake end finish applied by wrapping a jute cord and stitching it to the perimeter of the rug. The jute cord had degraded and was broken at intervals. Small sections of the wrapping were lost. The fake end finish was considered for removal, but this would then have required total replacement. In addition, removal would have significantly disrupted the areas where the cord was sewn to the rug, since the stitching technique pierced four to six warps. Therefore, it was

decided to stabilize and retain the fake edge finish. A linen thread was passed through the wrapping along the jute to bridge the weak and broken areas. The lost areas of wrapping were replaced with new wool.

In gallery lighting, the repairs are not obtrusive (figs. 6a, 6b). Because it is difficult to document reknotted areas with color photography, ultraviolet (UV) photographs of the completed rugs were also taken. The

Fig. 4a. "Lotto" rug, first half of the 16th century (The Saint Louis Art Museum 104:1929) before treatment.

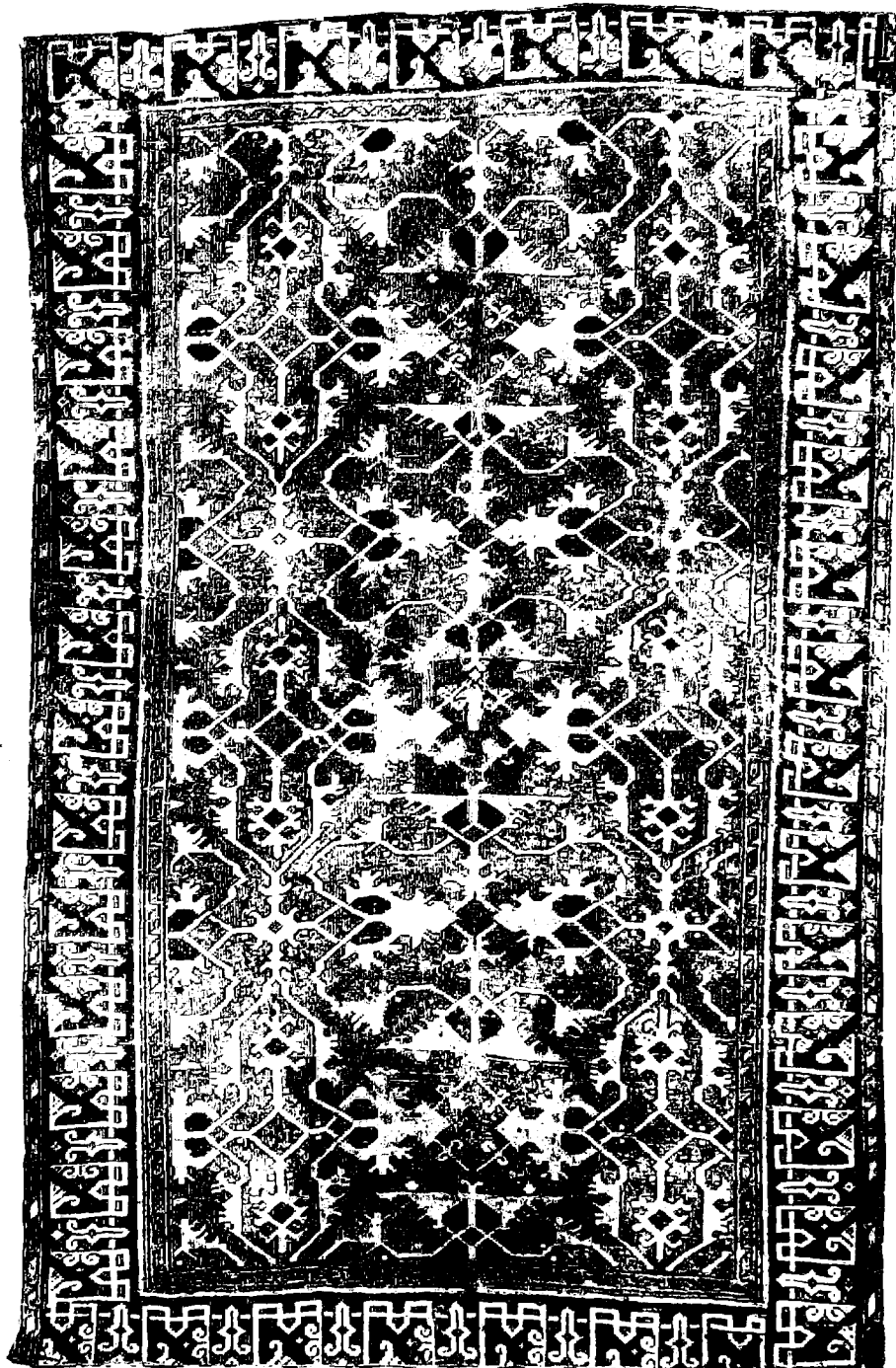




Fig. 4b. "Lotto" rug
after treatment.

UV photos provide a schematic diagram of the locations of the previous reweven and now replaced knots for the fill areas (fig. 6c). Worn areas of the rug were not disturbed or altered.

The low pile knotting technique, used predominantly in the outline of the design motifs, proved an effective way to recreate the original contrast between the motifs and background colors and blend with the overall worn condition of the rug. Replacement of the faded reknots with matching knots further improved the aesthetics of the rug by allowing the eye to flow through the piece.

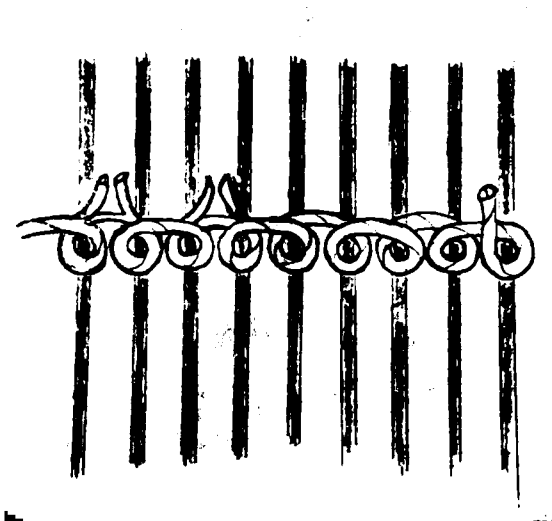


Fig. 5. Illustration of low pile knotting technique showing 50% of yarn on rug surface cut.

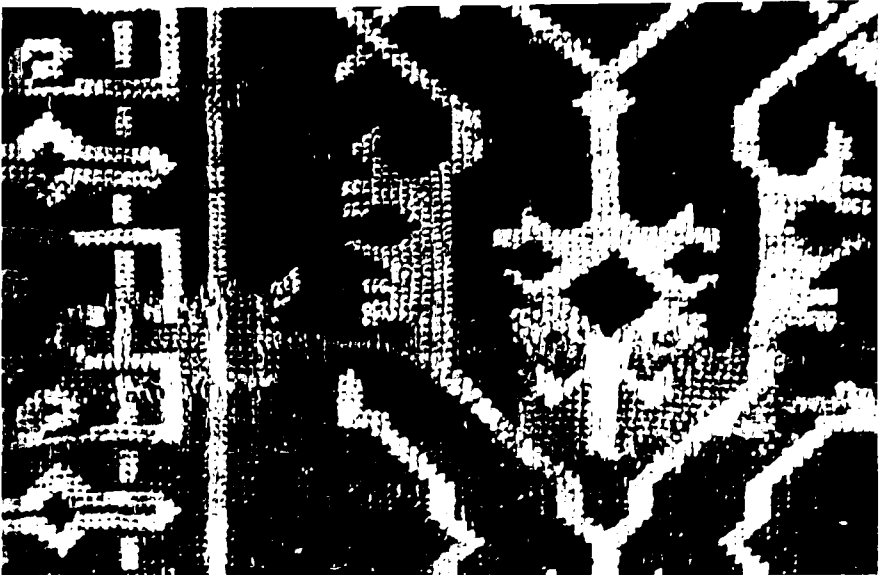


Fig. 6a. Close up of old faded reweaves in "Lotto" field.

Fig. 6b. After treatment of same area.

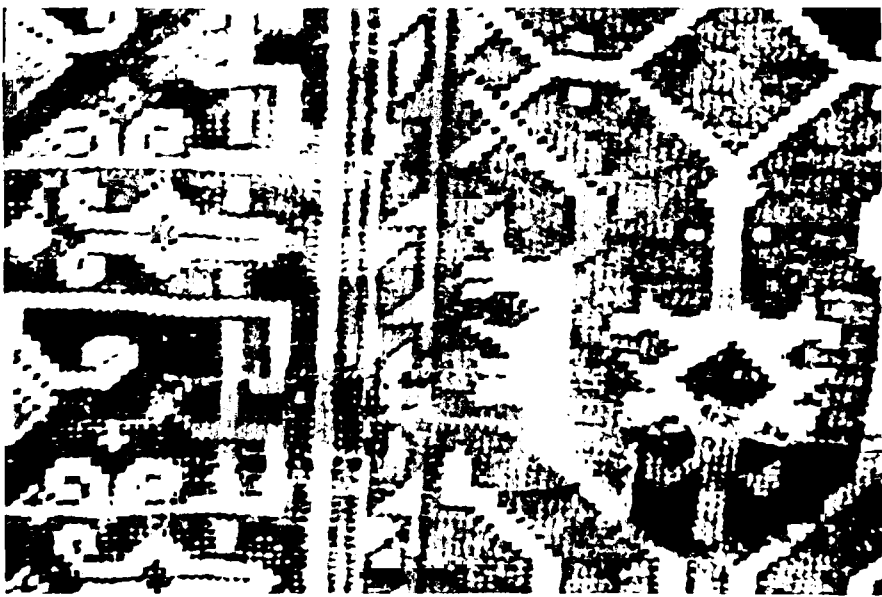
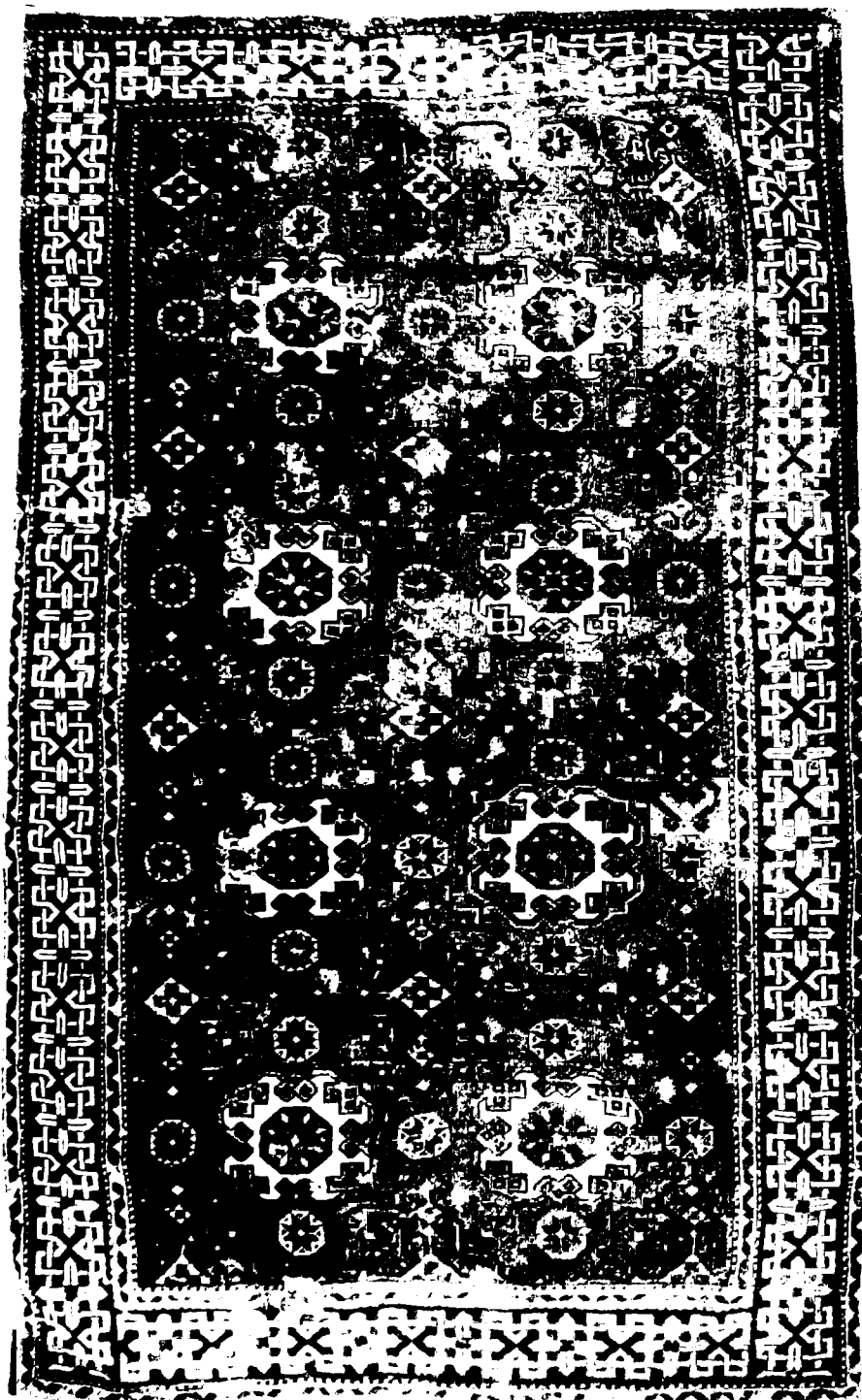


Fig. 6c. Ultraviolet photography of new reweaves.

Support Patch and Knotted Patch Insert Techniques

The third rug, commonly referred to as a small pattern "Holbein"⁵ (figs. 7a, 7b), received a more varied treatment than the first two rugs treated. The Holbein had been patched at least two times. In preparation for exhibition in the early 1970s, garish 19th

Fig. 7a. "Holbein" rug, late 15th or early 16th century (The Saint Louis Art Museum 106:1929) before treatment.



century patches cut from other rugs were removed from the Holbein and replaced with plain-weave fabric patches close in color to the areas of loss. This treatment was unsatisfactory as the texture of the rug could not be reproduced with commercial fabric.

As the first step of treatment, numerous commercial fabrics were placed behind the losses. All appeared obvious and disfiguring. This problem was resolved by using custom handwoven fabric patches in areas of small loss. The balanced plain weave patches (18 x 18 persquare inch thread count) were woven in several shades of wool that were prewashed and steamed. The coarseness of the fabric more closely implied a texture similar to that of a knotted surface. The patches were attached with cotton thread to the back of the rug with a running stitch, and any loose yarns from the perimeter of the losses were pulled to the back of the patch with a crochet hook. Some couching was necessary at the perimeter of the damage. Exposed warps were stitched in place on the front of the patch. For small areas of damage, the handwoven patches provided both significant visual improvement and support (fig. 8).

Four large areas of loss which had been filled with handwoven flatweave patches remained disfiguring. These areas were targeted for knotted patch inserts. A schematic knot-for-knot diagram was made for each area. Patches with continuous warp and weft selvages were woven to conform to the shape of each loss.⁶ A supplementary weft was put in as a spacer in the areas to be knotted, then removed as the knots were added to recreate the pattern. Each patch was steamed to set the shape of the knots.

The selvages of the patches extend only 1/4-inch beyond the knotted areas. Excess overlap at the edges of initial test patches caused a recessed, lumpy appearance. In the future, the use of a two-warp selvage would be preferable. This would avoid any overlap of the patch insert and the original areas.

On the "Holbein" rug, the patch edges were used to baste the knotted insert to the rug. Larger fabric patches were stitched behind the insert areas to reinforce their attachment to the rug and prevent stress from being concentrated at the edges of the losses (figs. 9a, 9b).

A one-inch-wide, cotton fabric tape cov-

ered the side selvages which had been cut, obscuring a significant portion of the rug's remaining side borders. The rug had no remnants of original selvedge. The wide tape was removed and replaced with 1/4-inch prewashed mercerized cotton tape. When attached, this tape folded to the back side

only, exposing more of the rug yet protecting and stabilizing the perimeter.

The custom woven patches and knotted inserts blended well into the surrounding areas of the Holbein which achieved the goal of de-emphasizing visual disfigurements.

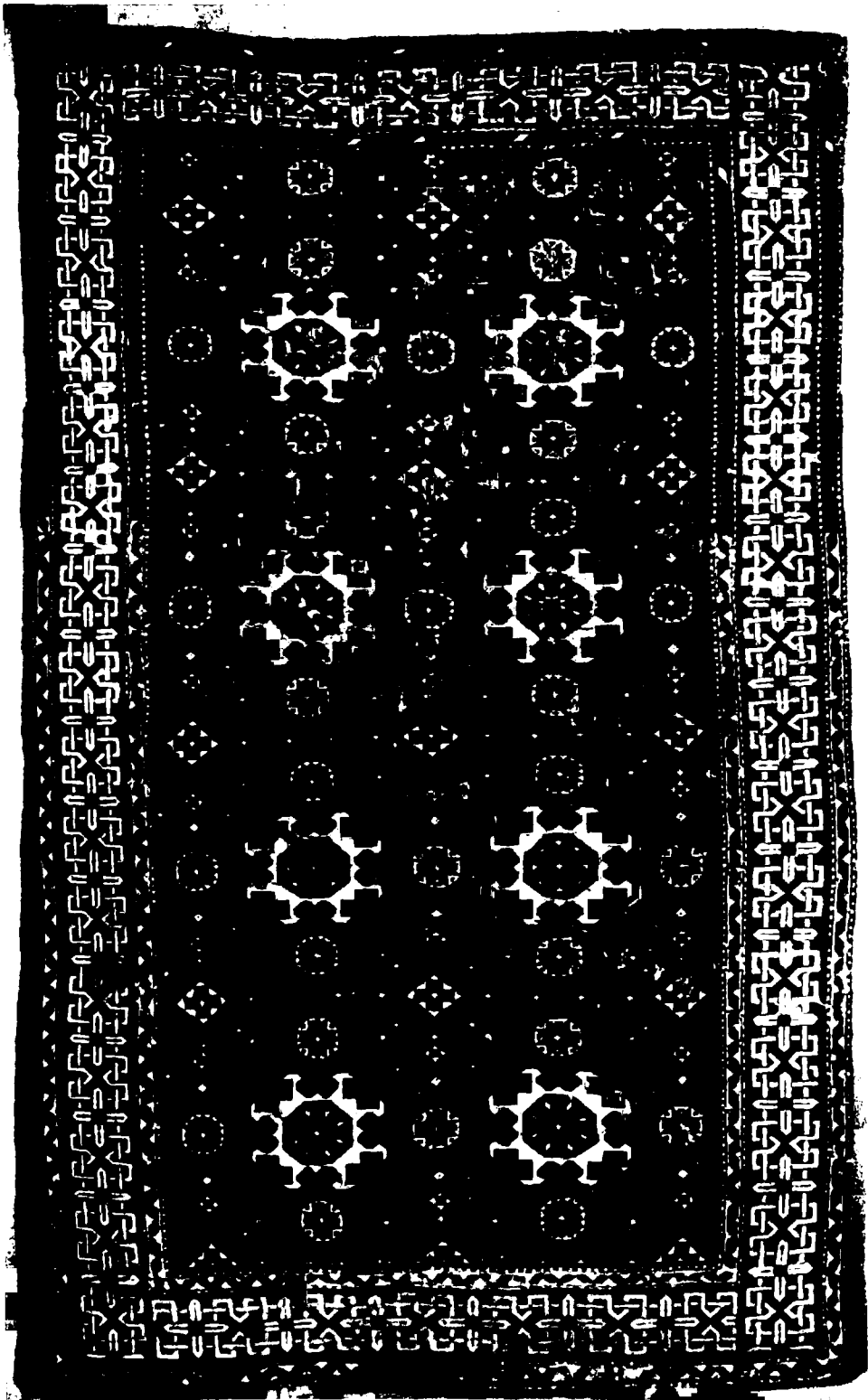


Fig. 7b. "Holbein" rug after treatment.



Reweave Insert and Selective Old Repair Removal Techniques

A 19th century Konya Medallion⁷ rug showed a number of distorted and disfigured areas of repair, primarily in the lower proper right quadrant, although intact original areas of the rug were sturdy (figs. 10a, 10b). Repairs included pink (faded from red) darning wool stitches over original knots, faded darning that wrapped around exposed warps, and one large area of combined darning and reweaving (fig. 11).

The old repairs represented the lightest and brightest colors on the rug and attracted attention directly to these areas. The repairs also placed stress on the adjacent original areas of the rug. Old repairs were removed selectively to alleviate this tension.

In the area of the red field below the medallion, removal of the pink stitching exposed darning and distortion from an even earlier repair. Tears in the rug had been stitched closed and compressed. In order to release the tension in this area, the previous stitching was removed. A large area of loss of solid color was apparent.

Various treatments were considered. The areas surrounding the damage were stable, although the edges were ragged. Patches would have provided limited support if the piece were flexed or handled. It was decided to stabilize more thoroughly this area with reweaving, including replacement warp and weft (fig. 12). Discontinuous original warps were either incorporated into the reweave or placed to the back of the rug.

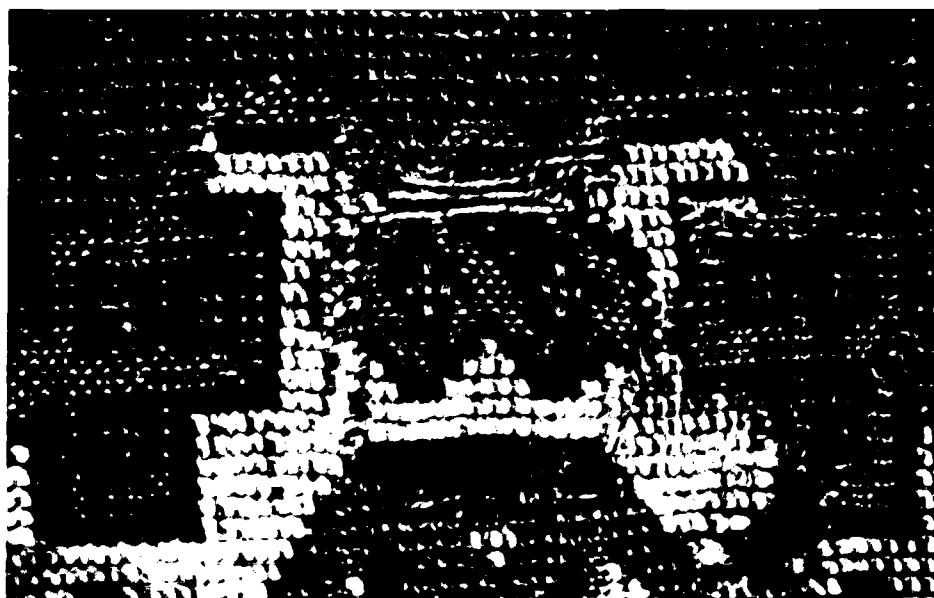
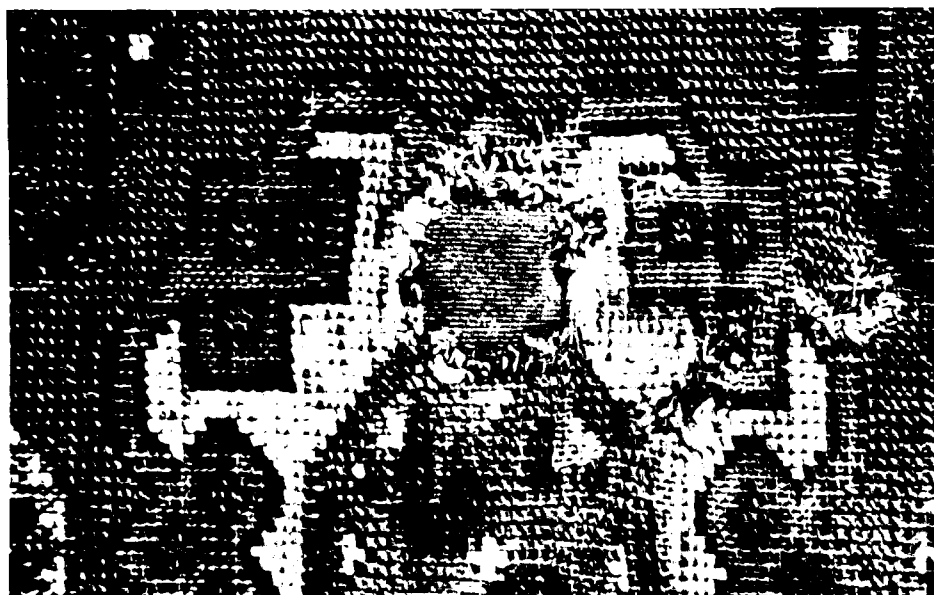


Fig. 8. Detail of "Holbein" area of loss compensated with hand-woven patch.

Fig. 9a. Detail of area of loss before treatment with previous patch technique.

Fig. 9b. Detail of area after treatment with knotted patch insert with original warp couched in position.

This area of reweaving, while less disfiguring than the previous darning and stitching, remains evident as an area of repair because no original materials were removed. The repair required incorporating the jagged edges of the loss and partially opened knots at the edge of the loss into the final reweave. Like the edges of the reknotted area of the Kula, the original knots at the edge of this area still draw attention to the repair.

The portion of the rug with the largest disfigurements exhibited several techniques and phases of repair. The condition of the rug under the darned areas was predictable: the distortion suggested that a much larger area of loss would occur if the reweaves were removed. Numerous fragments of the original rug were extant within the repair area. Unlike the smaller rewoven areas, it appeared likely that original material would be compromised if the repair were removed. Therefore, the consensus was to not proceed with any removal of the major repairs in this area, although some pink darning was removed. Instead of a reweave insert, a more moderate approach was taken. Faded repair knots were removed, and selective reknotted was used to visually improve the area.

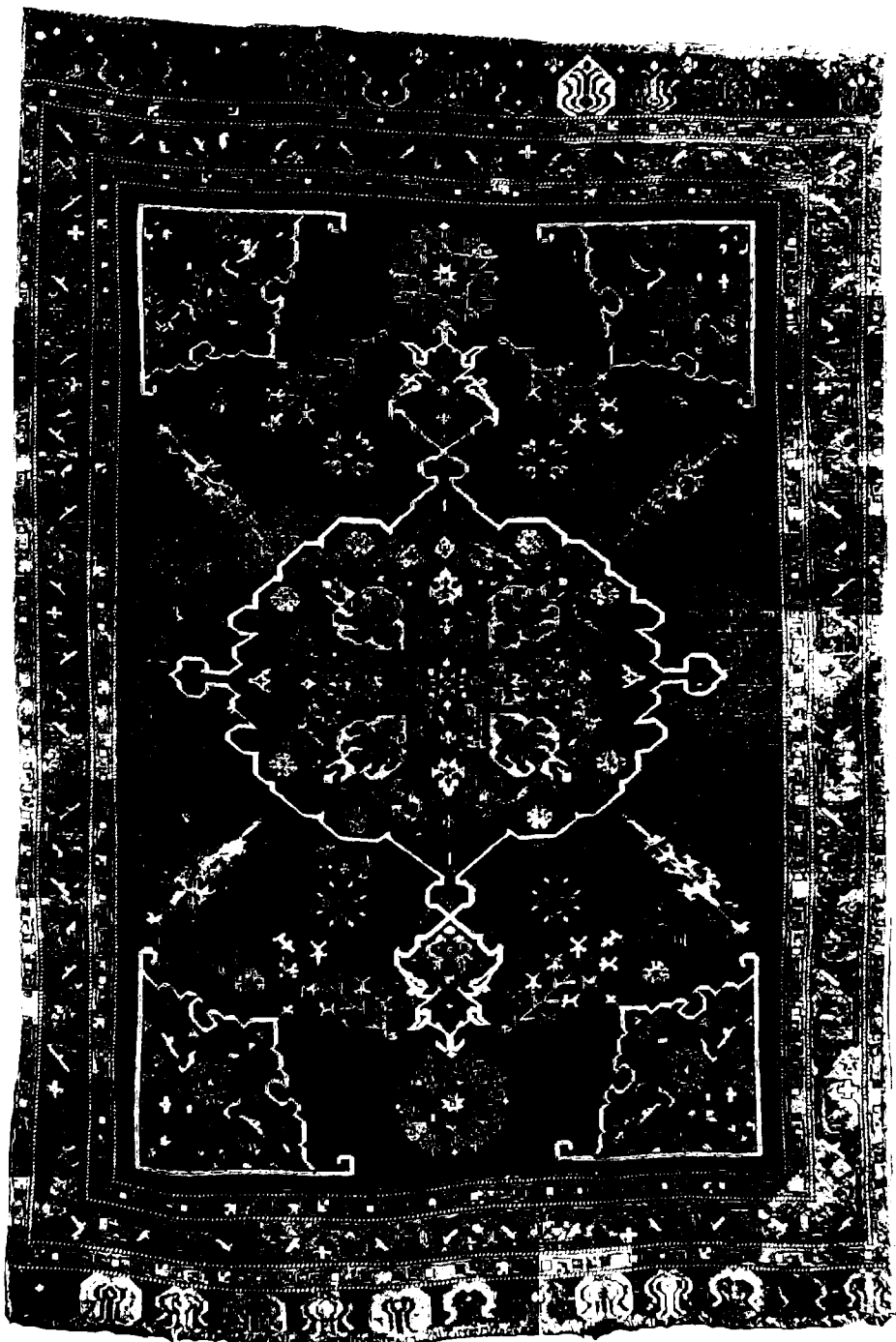
The discovery of extensive damage under previous repairs greatly limited the aesthetic improvements that had been planned for this rug. A more aggressive approach would have necessitated both the loss of original elements and intrusion into weak areas of the rug, which did not fit into the guidelines of this project. While the floral field motif in the proper right quadrant could not be completely restructured, removal of some bright darning repairs and selective knot replacement did visually improve the rug.

Conclusion

An evaluation of the result of treatments for these four rugs from the Ballard Collection showed that the restoration techniques of reknotted and reweaving were best suited to these textiles when selectively applied. Aesthetic improvement was most satisfactory and well justified when restricted to previously repaired areas and the replacement of old restoration knots. Reweaving was difficult to accomplish to the aesthetic satisfaction of the restorer, who was held

to conservation parameters. However, reweaving could be accomplished without loss or damage to the original materials. While no new techniques were invented during this project, the authors were able to combine and utilize techniques and skills previously used only by restorers or conservators. The balance of these approaches provides alternative treatments which allow for the visual improvement of a pile rug within the limits of conservation ethics.

Fig. 10a. Konya Medallion rug, 19th century (The Saint Louis Art Museum 186:1929) before treatment.



The photographs with this article are printed with the permission of The Saint Louis Art Museum.

About the Authors

Zoe Annis Perkins has worked at The Saint Louis Art Museum as Textile Conservator since 1979. She earned her master's degree at Kansas State University in Clothing and Textile Science with an emphasis in historic textile conservation. She received additional training in conservation at the Abegg Stiftung in Bern, Switzerland. Her publication topics have included bleaching of historic cottons and upholstery conservation.

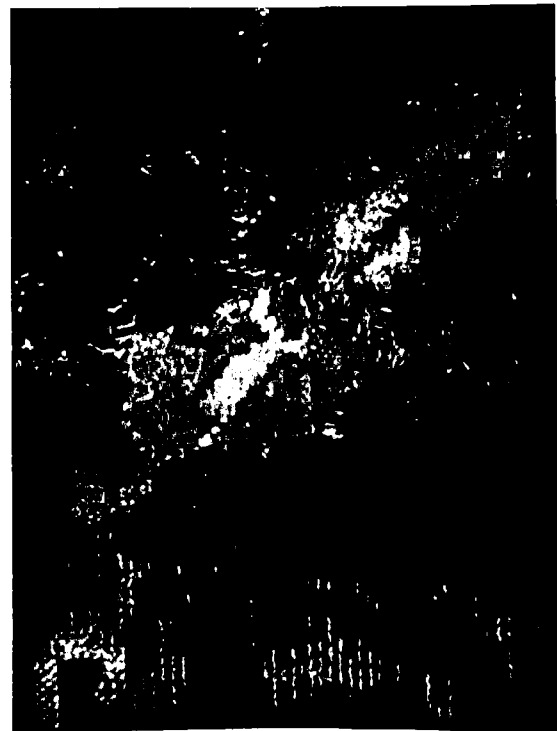
Jeanne Brako is the director of Art Conservation Services in Denver, Colorado, specializing in the treatment of textiles and ethnographic objects. Prior to this, she was Head of Textiles at the Rocky Mountain Regional Conservation Center. Ms. Brako received her training at the Institute of Fine Arts Conservation at New York University, and she has published articles on Navajo textile conservation.

Robert Mann is the sole proprietor of Robert Mann Oriental Rug Restoration in Denver, Colorado. Since 1971 he has traveled extensively in rug producing countries studying regional rug styles and techniques. In 1976 he apprenticed with Mr. Hamid Sharifzadeh, a Denver-based rug restorer.



Fig. 10b. Konya Medallion rug after treatment.

Fig. 11. Konya Medallion rug, detail of lower proper right with faded reknotted and warp wrapping.



Notes

1. Daniel Walker, "Turkish Rugs," *The Saint Louis Art Museum Bulletin* 18, no. 4 (1988).

2. *Ibid.*, 24.

Technical data:

Kula prayer rug, late 18th or early 19th century, 162.5 cm x 113 cm (64 in x 44-1/2-in). Gift of James F. Ballard, 186:1929

Warp: Z2S ivory wool, ends dyed yellow, alternates slightly to moderately depressed

Weft: Z wool, mostly light yellow-brown but some orange-red, x 2, sometimes 3, lazy lines

Pile: light Z wool, Turkish knot, 43 V x 29 H = 1247 per sq dm (82 1/2 per sq in)

Sides: 2 warp cords, inner cord weft-wrapped, overcast in blue-green or light yellow-brown wool

Colors (12): red, ecru, pale brown-yellow, light brown, medium brown, medium blue-green, light blue-green, dark blue, medium blue, light blue, ivory, black

3. For the purpose of this paper, reknottng refers to the addition or replacement of pile knots on original warps and weft; reweaving involves the replacement of lost or damaged warps and weft, often in conjunction with the replacement of lost pile knots.

4. Walker, "Turkish Rugs," 9.

"Lotto" rug, first half of the sixteenth century, 171 cm x 111.5 cm (67-1/4-in x 44 in). Gift of James F. Ballard, 104:1929

Technical data:

Warp: Z2S ivory wool, ends dyed orange-red, alternates slightly depressed

Weft: Z red-orange wool x 2, lazy lines in field and borders

Pile: Z2 wool, Turkish knot, 35 V x 29 H = 1015 per sq dm (67-1/2 per sq in)

Sides: not original

Ends: not original

Colors (7): red, yellow, dark brown, dark blue-green, medium blue, dark blue, ivory

5. *Ibid.*, 8.

Small-pattern "Holbein" rug, late 15th or early 16th century, 194.5 cm x 120 cm (76-1/2-in x 47-1/4-in). Gift of James F. Ballard, 106:1929

Technical data:

Warp: Z2S ivory wool, alternates slightly depressed

Weft: Z wool, red-orange and pale purple, x 2, lazy lines

Pile: Z2 wool, Turkish knot, 35 V x 27 H = 945 per sq dm (63 per sq in)

Sides: single warp, weft-wrapped, overcast with orange wool



Ends: top has few rows of plain weave band with orange wool wefts; bottom cut

Colors (8): light brick red, dark brick red (abrush to mostly pale purple), orange, pale yellow, medium green, dark green-blue, light blue, ivory

6. The patches, with their continuous warp and weft system, are similar in construction to Navajo rugs.

7. Walker, "Turkish Rugs," 29.

Konya Medallion rug, 19th century, 170 cm x 113 cm (67 in x 44-1/2-in). Gift of James F. Ballard, 129:1929

Technical data:

Warp: Z2S wool, ivory with a little brown mixed, alternates moderately depressed

Weft: Z wool, red or pink, x2

Pile: Z2, occasionally Z3 wool, Turkish knot, 43 V x 37 H = 1591 per sq dm (104-1/2 per sq in)

Sides: not original

Ends: top has narrow plain weave band, red wefts, warp fringe; bottom has warp fringe

Colors (12): red, orange-red, purple, pink, orange, yellow, dark brown, light green, light green-blue, medium green-blue, dark blue, ivory

Fig. 12. Konya Medallion rug during reweaving treatment of area below medallion.

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